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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/506,905	09/07/2004	Kurt Byskov	742111-161	7668

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EXAMINER	
MAI, THIEN T	

ART UNIT	PAPER NUMBER
2876	

DATE MAILED: 11/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/506,905	BYSKOV ET AL.	
	Examiner	Art Unit	
	Thien T. Mai	2876	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 September 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10 and 12-15* is/are rejected.

7)☒ Claim(s) *11* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 September 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The Amendment filed by Applicant on 07 September 2004 is hereby acknowledged.

Specification

2. The abstract is objected to because it contains legal phraseology "wherein". Correction is respectfully requested. See MPEP chapter 600.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim(s) 1-3, 9,and 13 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Kou (US. Patent 6,027,019) in view of Duquette (US 6,762,847).

Regarding claim(s) 1-2 and 13, Kou discloses the following text:

> *"With reference also to the flow chart of FIG. 4, when triggered by the picking of a component, scanner 24a scans label 22' to determine the identification of feeder 16'. The picked component is identified by the association between feeder and component reel that was previously input into the system database when the feeder was loaded. Meanwhile, scanner 24b scans slot label 26' to determine the slot number. Referring to information provided by the placement program, the monitoring system determines the component number that is supposed to be loaded at slot 28'. This component identification is compared to the component identification determined by the scanning of feeder label 22' by scanner 24a. If the identifications do not match, an alarm sounds. Thus the system continuously monitors the arrangement of feeders 16 to detect errors in*

feeder platform loading. If the identification numbers are the same (i.e., the feeder number and slot number indicate the same component identification) then the database is updated and the process repeats upon the next pick. The updating of the database includes decrementing the recorded quantity of components on feeder 16' for inventory control and updating the recorded number of times a particular feeder has been accessed (or picked from) for feeder maintenance purposes. If packaging constraints permit, a single bar code scanner may be employed to scan both the feeder and slot labels." (Fig. 4 Detail Description)

Accordingly, Kou discloses a method comprising:

determining the feeder ID's carried by installed feeders by scanning the ID on feeder's label and comparing it with stored configuration in the placement program to check whether the feeder is to be at a configured slot 28'; otherwise, an alarm is raised. Through cited text, Kou further discloses a scanner is used for analysis of the label, inherently implies an image on the label is being analyzed, to determine the proper feeder information as discussed.

Kou though fails to expressly mention the scanner/camera is to span over the series of feeders and to provide an image for analysis and for feeder ID determination.

Duquette discloses a scanner/camera capable of detecting multiple components from the feeders by employing multiple light sources (col. 1 lines 20-40 and 62-65) and use the obtained coordinates to identify the components (col. 9 line 56). See also reference text:

"FIG. 3 illustrates that more than one nozzle 30 can be disposed in the sensing field 31, such that multiple component orientations and the locations can be imaged substantially simultaneously in order to reduce processing time." (Fig. 3 Description)

Therefore, it would have been *obvious* to one of ordinary skill in the art at the time of invention to incorporate Duquette's teachings by employing a replacement camera having multiple light sources for detecting the coordinates as ID's of multiple feeders in the slots. One

of ordinary skill in the art should be motivated to have such a camera for its ability to scan multiple objects simultaneously and thus improve production time.

Regarding claim(s) 3 and 9, Kou describes in paragraph 10 (col. 5 lines 49-68) of Detail Description that a cache memory as a list is used to store the intended feeders ID's that are compared with scanned feeder ID's and alarm is raised if the comparison fails. Also in paragraphs 6 and 9 of Detail Description section that the list also contains the component identification associated with the feeder number and slot number which are subjected to verification against a database, which by definition is also a list, by the scanner as discussed also in claim 1.

5. Claim(s) 4 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Kou (US. Patent 6,027,019) in view of Duquette (US 6,762,847) and Suhara (20020053133)

Regarding claim(s) 4, Kou discloses in paragraph 10 of Detail Description section that the "monitor system scans the feeder label (for feeder ID) and slot label (for slot number) at the pick location", which implies the pick location at the feeder is known by the system through a database in cache memory or other database means. Kou fails to expressly state the location of the feeder being obtained by a camera. Suhara discloses in Specification par. 142 and 145 that "the height position of the upper surface of the standard feeder 600 is detected by either one of the two EC,height-position detecting devices 284, and is stored as the reference height position of sucked surface 96 in the EC-height position memory 558." This implies that the position of the feeder is detected by a CCD camera (see Specification par. 124-125) and stores it in the memory database. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to utilize the teachings of Suhara in the Kou-Douquette combination by employing a camera to obtain the position of the feeder with the motivation for the desire for minimizing errors in locating accurate position of the feeder.

6. Claim(s) 5-8 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Kou (US. Patent 6,027,019) in view of Duquette (US 6,762,847) and Tang (US 5,878,151) and Kou (US 6,778,878, Kou'878 hereinafter)

Regarding claim(s) 5 and 7, Kou-Duquette together fail to indicate the image is analyzed to calibrate the positions of the feeders. Tang discloses in column 7 line 30-50, columns 13-15, and figures 4-6 and 12-13 that images are taken by a camera to track the coordinates of steam generator tube openings whose positions are undesirably moved due to noise, so that the articulating arm of a robot can place the tool end effectors in the openings accurately. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to incorporate Tang's teachings using the image taken for the feeders and assign the coordinates captured to the feeders so that errors leading to malfunctioning of the machine can be minimized by ensuring the accurate positions of the feeders.

Regarding claim(s) 6, since the distances between the feeders, slots, and/or the tubes are mechanically equal, therefore the position of the n^{th} feeder is mathematically equals to the position coordinate plus the distance between two consecutive feeders times n.

Regarding claim(s) 8, above references discloses all limitations set forth in this claim as discussed above except that the feeder slots are mounted on a displaceable platform. Kou'878 teaches displaceable feeder platforms are known in prior art (see Fig. 1, col. 5 lines 35-50). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use a movable feeder platform such as of Kou'878 so that it can be used with a stationary and/or rotating picking mechanism.

7. Claim(s) 10 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Kou (US. Patent 6,027,019) in view of Duquette (US 6,762,847) and Kawai (20020124391)

Regarding claim(s) 10, Kou-Duquette discloses all limitations set forth in this claim as discussed above except for checking for each intended coordinate whether an actual feeder is

assigned to said position, and indicating alarm if not the case. Kawai teaches in paragraphs 0013, 0031, 0075 that the parts mounting device comprise an indication means to indicate whether a component feeder has been mounted at the wrong feeder-mounting or slot position. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to incorporate Kawai's teachings so that errors and/or damage to component or equipment can be avoided.

8. Claim(s) 12 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Kou (US. Patent 6,027,019) in view of Duquette (US 6,762,847) and Huber (20020143423)

Regarding claim(s) 12, Kou-Duquette discloses all limitations set forth in this claim as discussed above except the method involving spliced placement machine comprising image recognition of a label at the splicing region of the component reel in a feeder (104) and storing the data and time for the use of components from a spliced reel. Huber discloses such method is known. Specification par. 36-46 describes the scanning of the bar-coded spliced reel and calculation of the refill timing of the reel. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to incorporate Huber's method to properly manage the refill of the component reel thus improving production.

9. Claim(s) 14 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Kou (US. Patent 6,027,019) in view of Duquette (US 6,762,847) and Lyndaker (20030219330)

Regarding claim(s) 14, Kou-Duquette discloses all limitations set forth in this claim as discussed above except for the image being analyzed for recognition of reel pitch. Lyndaker such method is used in automating the auto-loading component tape feeder by using a sensor detecting the presence of repeatable feature of the component tape (Specification par. 17). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to incorporate Lyndaker's teachings by analyzing obtained image for repeated pattern of the components so that component feeding automation is achieved.

10. Claim(s) 15 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Kou (US. Patent 6,027,019) in view of Duquette (US 6,762,847) and Overman (20040186616)

Regarding claim(s) 15, Kou-Duquette discloses all limitations set forth in this claim as discussed above except for expressly disclosing the use of a digital camera for providing the image. Hudson discloses in Specification par. 26-27 the use of digital camera in a placement machine 100 over the component feeders 106. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to incorporate Hudson's teaching by having a placement machine having digital camera similar to Hudson's with the motivation for the desire to provide more accuracy in the image analysis.

Allowable Subject Matter

1. Claim 11 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Prior Art does not show or reveal

- for each actual feeder, determining from stored configuration information (201) a first component ID (204') for the type of components actually contained in said actual feeder, where said stored configuration information comprises a first list (201) associating each intended feeder ID with a component ID (204') indicative of the type of component to be contained in the corresponding feeder (203),

- for each slot (208) defined to contain a feeder, determining from stored configuration information (207) the second component ID (204) for the component that is supposed to be contained in a feeder (104) in said slot (103), where said stored configuration information comprises a second list (207) associating feeder slots with component IDs,

- checking (2 13) whether the first (204') and the second component ID (204) are equal, and if this is not the case, indicating (209) this discrepancy.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thien T. Mai whose telephone number is 571-272-8283. The examiner can normally be reached on Monday through Friday, 8:00 - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lee can be reached on 571-272-2398. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thien T Mai
Examiner
Art Unit 2876

TM

THIEN M. LE
PRIMARY EXAMINER